



- THE SEALED DOUBLE GLAZING UNIT
- GUARANTEED FOR 5 YEARS

BUT

- MANUFACTURED TO BE FAULT FREE FOR THE LIFE OF THE BUILDING.



INSULATING GLASS UNIT

LE VITRAGE ISOLANT plypane®

FABRIQUÉ AU CANADA

ÉPROUVÉ PAR LE CONSEIL NATIONAL DES RECHERCHES.

ACCEPTÉ PAR LA SOCIÉTÉ CENTRALE D'HYPOTHÈQUES ET DE LOGEMENTS
No. 4741

plypane® UNIT

MADE IN CANADA

TESTED BY M.R.C.

BEARS C.M.H.C. APPROVAL No. 4741

plypane inc.

9900 RAY LAWSON — VILLE D'ANJOU, MONTREAL, QUE.

NOUVEAU NUMERO: 352-1550

A CANADIAN PRODUCT



DESCRIPTION OF PLYPANE

PLYPANE is made up of two or more lights of "optically" cleaned glass separated by $\frac{1}{4}$ " or $\frac{1}{2}$ " of dehydrated air space and permanently sealed at the edges with a perfected sealant. The mechanical strength of the seal is effected by the pressure from a Stainless Steel cover at the perimeter of the unit.

STRUCTURE

- 1 — Steel spacer
- 2 — Dehydrating agent
- 3 — Low V.T.R. sealant
- 4 — Stainless Steel cover
- 5 — High adhesion, flexible plastic cushion
- 6 — Glass Optically clean



ADVANTAGES OF PLYPANE

- 1 — PLYPANE eliminates the seasonal problem of maintenance, washing, installation, removal and storage of storm windows or other types of double glazing.
- 2 — PLYPANE outstanding insulating properties permit: Savings in heating cost — Reduction in initial cost and operating load on air conditioning systems — Lower noise transmission.
- 3 — PLYPANE gives permanent crystal clear "PANORAMIC" vision affording maximum glass surfaces without any obstruction and virtually eliminates all condensation in the air space between the two lights of glass.
- 4 — PLYPANE because it incorporates in its fabrication all the latest advances in research and manufacturing will far outlast the guarantee period.

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PLYPANE ENGINEERED TO BE TROUBLE FREE!

TECHNICAL INFORMATION ON PLYPANE

HEAT LOSS REDUCTION

One of the most outstanding property of Plypane is its heat insulating characteristics.

Table No 1 gives the calculated overall heat transmission coefficient (U Value) for three different outside air conditions, the inside conditions being constant at 70° F and air velocity 0.25 MPH (Natural convection air movement). The heat transmission for a single light of glass is also given for comparison purposes.

TABLE NO 1 — "U" FACTORS AND HEAT LOSS REDUCTION OF PLYPANE COMPARED TO SINGLE GLAZING.

("U": number of BTU's per hour per ° F difference in temperature and per square foot of unit.)

CONDITIONS				"U" Glass 1/4"	"U" 1/4" 1/2" 1/4"			Heat loss reduction %	"U" Glass 32 oz. 1/2" 32 oz.	Heat loss reduction %	"U" Glass 24 oz. 1/4" 24 oz.	Heat loss reduction %		
INSIDE		OUTSIDE												
Temp.	air velocity	Temp.	wind velocity											
70°F	still	0°F	15 m/h	1.21				25%	1.23	.595	52%	1.24	.670	45%
70°F	"	- 10°F	20 m/h	1.25				52%	1.27	.608	52%	1.28	.680	47%
70°F	"	- 20°F	30 m/h	1.32				53%	1.34	.623	53%	1.35	.700	48%

INSIDE GLASS TEMPERATURE AND SURFACE CONDENSATION

Condensation on the glass surface will occur (inside the building) when the surface temperature of the glass reaches the dew point of the ambient air. Table No. 2 gives the relative humidity values at which condensation will begin for different outside conditions.

TABLE NO 2 — % RELATIVE HUMIDITY AT WHICH CONDENSATION OCCURS FOR DIFFERENT OUTSIDE CONDITIONS. INSIDE TEMPERATURE CONSTANT AT 70° F.

Outside Temp. °F.	24 oz. sheet % R.H.	1/4" plate % R.H.	24 oz. Plypane 1/4" air space % R.H.	1/4" plate Plypane 1/2" air space % R.H.
- 20	8	9	30	36
- 10	12	13	34	40
0	16	17	38	45
10	21	22	44	50
20	27	29	50	56
30	36	37	56	62

NOISE INSULATION

The psychological and physiological effects of noise on the human being are such that the reduction of outside noise is a predominant factor to be considered in improving general comfort and workers efficiency. It has been established that the use of sealed units like Plypane will cut 40 to 45% more traffic noise than a single 1/4" plate glass.

Additional technical information on sealed units is available from our engineering dept.

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FABRICATION SPECIFICATIONS

I — GENERAL

Plypane is a sealed unit scientifically designed with these basic principles in mind.

- a) Temperature differences and changes in barometric pressure produce variations in sealed air pressure imposing stresses on the seal.
- b) Temperature differences produce variation of Thermal expansion or contraction between the glass and metal edges imposing stresses on the seal.

The permanency of the unit is based mainly on the ability of the seal to resist fatigue flexing along with weather, sun, ultra violet, and other radiation effect. Therefore all materials used in the fabrication of Plypane have been selected with the physical and chemical properties compatible with the fabrication of a sealed unit that should function properly for the life of the building in which it is installed.

The air tightness of the unit is also related to the quality of the spacer bar corners which should be perfectly and consistently pressure tight. Consequently a brazing joining method has been perfected after an extensive metallurgical survey.

II — MATERIALS

GLASS

Each light of glass of Plypane is

- carefully selected for utmost perfection
- carefully handled with special equipment to reduce the danger of introducing hairline cracks.
- mechanically washed with a special solution leaving an "optical" clean surface free of scum or other sulphur bearing film which may interfere with the permanency of the seal and also produce vision obstruction after a few years exposure to sun rays.

SPACER

The Plypane spacer is made of rolled steel with a scientifically designed lock seal to insure maximum rigidity and prevent sagging specially in large size units.

SEAL

The Plypane seal consists of a non curing completely saturated straight chain hydrocarbon providing substantial green tack at temperature as low as -40° F. Plypane seal material is nonpolar preventing infiltration of water molecule through capillary cracks. Plypane seal also prevents diffusion of water molecule through its molecular lattice.

COVER ADHESIVE

The Plypane cover adhesive is a plastic material insuring constant adhesion of the cover to glass preventing moisture infiltration between the cover and the edges of the glass, and also producing a positive and elastic cushion between the glass and the cover. This cushion is a protection against mechanical shock and it is practically a second seal. The flexibility of this cushion prevents stressing the glass edges — and prevent migration from oil base caulking material in the seal.

COVER CHANNEL

The Plypane cover is made of stainless steel because of its corrosion resistance properties, its mechanical strength insuring permanent pressure on the joint and protecting effectively the edges of Plypane.



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TECHNICAL SPECIFICATIONS

- Plypane can be manufactured in a wide variety of sizes, and types of glass.
- Plypane should be ordered with the first dimension being the width since draw lines in the sheet glass will be parallel to the first dimension.

● DIMENSIONAL DATA TABLE

Code	Type of Glass	Maximum Size 1/4" or 1/2" air space	Thickness in inches ¹				Nominal Size Tolerances	Approx. Nt. wt. per sq. ft.	Maximum load ²	
			Glass and air space		Total metal edge				lbs/sq. ft.	wind velocity m.p.h.
			1/4"	1/2"	1/4"	1/2"				
A F G H	24 oz. 1/8" polished plate 1/8" Heat absorbing 1/8" pattern glass	max. width 48" max. height 76" max. area 2300 sq. inches	1/2"	3/4"	9/16"	13/16"	+ 1/8" — 1/16"	4 lbs	25	75
B	32 oz. sheet	max. width: 72" max. height: 76" max. u. i.: 110	9/16"	13/16"	5/8"	7/8"	+ 1/8" — 1/16"	5 lbs	25	75
C	3/16	max. width: 120" max. height: 134" max. u. i.: 140	5/8"	7/8"	11/16"	15/16"	+ 3/16"— 1/16"	6 lbs	26	78
D	7/32	max. width: 144" max. height: 134" max.: 7200 sq. in.	11/16"	15/16"	3/4"	1"	+ 3/16"— 1/16"	6 1/2 lbs	20	70
E	1/4	max. width: 144" max. height: 144" max.: 9600 sq. in.	3/4"	1"	7/8"	1 1/8"	+ 3/16"— 1/16"	7 1/2 lbs	20	70
J	1/4 Heat absorbing	Short dim.: 120" Long dim.: 144" max.: 7200 sq. in.	3/4"	1"	7/8"	1 1/8"	+ 3/16"— 1/16"	7 1/2 lbs	26	78

¹ All thicknesses are + or — 1/32"

² Values are determined using the outside pane only

providing an extra security margin of about 50%. Formula used: $P = \frac{20880 t^2 F}{AS} \approx 0.004 V^2$

V = wind velocity in miles per hour

P = pressure in lbs/sq. ft.

t = thickness of glass in inches

F = l (ratio of weight to height)

A = area in sq. ft.

S = l (safety factor)

LIMITATIONS:

- 1 — When both dimensions exceed 48", the unit will be manufactured with 1/2" air space only.
- 2 — The maximum area or united inches governs the maximum widths and heights.

- Plypane can be manufactured to straight edge shapes in any polygonal shapes. A full scale paper or card board pattern is required for production purposes.
- Plypane cannot be guaranteed if manufactured in sizes outside the limits given in the above table.
- Plypane are not available in bent shapes, or with cut out, notches, holes and finger pulls.

THERMAL SHOCK

There is a breakage hazard in sealed units when they are subjected to excessive stresses. This is also true for single light of glass.

These stresses may be minimized by:

- a) leaving the glass surfaces free of painted signs decorations, stuck on cardboard etc. and avoiding drapes, curtains or venetian blinds to be hung too close to the glass surfaces.
- c) preventing uneven heat distribution along the face of the glass surfaces.
- d) installing the unit with proper clearances, in elastic sealing materials. This is very important at low temperature when the maximum elasticity of the bedding material is required to insure free movement of the unit in the window frame.

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GLAZING SPECIFICATIONS

GENERAL

Plypanes because of their sealed air space are subjected to continuous movement due to changes in temperature and barometric pressure. This characteristic inherent to all factory sealed insulating glass often referred to as "pumping action", produces stresses in the glazing bead. These stresses will break the seal between the glass and the mouldings unless the glazing bead is elastic and adhering under all weather conditions. Adequate provision should be made for contraction and expansion of all window members and a cushioning elastic material should be used so that there is no contact between sash and glass at any point.

RECOMMENDATIONS

The following recommendations should be followed if the warranty of Plypane is to apply but it should not be assumed that the term of Plypane liability would automatically apply since many unknown factors could be responsible for failure. Thorough inspection of any defective unit should be made to determine the cause of defect.

- 1 — Plypane must not be installed unless sash opening is square and plumb; the window frame should be strong enough to support without deformation the weight of the unit.
- 2 — Proper clearances should be maintained around the edges.
- 3 — Installation clearances & rabbet depths.

	24 oz.	heavy sheet		plate	
Glass size *	- 80 u. i.	- 80 u. i.	+ 80 u. i.	- 80 u. i.	+ 80 u. i.
A — Face clearance	1/8"	1/8"	1/8"	1/8"	1/8"
B — Edge clearance	1/8"	1/4"	1/4"	1/4"	1/4"
C — Steel edge	3/8"	3/8"	3/8"	3/8"	3/8"
D — Rabbet depth	1/2"	3/4"	3/4"	3/4"	3/4"

* united inches (width + height)

- 4 — It is advisable to use neoprene setting block or strips and spacers to insure uniform clearances. Other materials like hardwood, polybutene strips and synthetic rubber can be used for setting blocks.
- 5 — NON HARDENING ELASTIC materials should be used for sealing the unit between mouldings. In small units face glazing can be made with a good knife grade non hardening glazing compounds.
- 6 — The recommendations for setting sealed glass unit given by reputable glazing compounds suppliers should be carefully followed up.
- 7 — The identification sticker is always placed on the light of glass to be inside the building.
- 8 — At no time should Plypane carry structural loads. The unit should be free to expand and contract without touching framing parts.

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ARCHITECTURAL SUGGESTED SPECIFICATION

PLYPANE DESCRIPTIVE SPECIFICATIONS

All insulating glass shall be manufactured in Canada (by Plypane inc.). All glass shall be of thickness and characteristic as indicated on the drawings No and in the specifications section No The spacer shall be made of rolled steel with longitudinal lock seam to insure proper strength. The air space shall be $\frac{1}{2}$ or $\frac{1}{4}$ ". The glass edge shall be covered with a stainless steel channel rolled to insure a minimum pressure of 4 lbs per linear inch without permanent deformation of the cover.

PLYPANE INSTALLATION SPECIFICATIONS

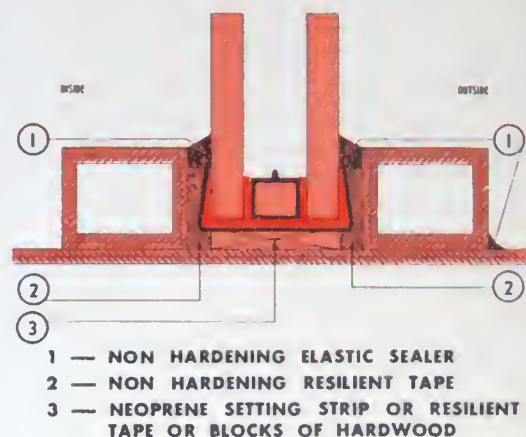
In all metal window frames a polybutene tape shall be used on the outside face of the rabbetted sections. The tape section will be of such width that a space of no less than $\frac{1}{8}$ " is left between the edge of the tape and the face of the moulding to provide a good liquid polymer (100%) seal between the glass and the moulding. Inside the window a similar tape shall be used topped with glazing compound or liquid polymer. The thickness and width of the polybutene tape shall be in accordance with the drawings.

In all wood windows all sections shall be treated to prevent decay before assembling the windows. The solution used shall not contain ingredients that could prevent proper adhesion of caulking materials used in the installation of the sealed glass units.

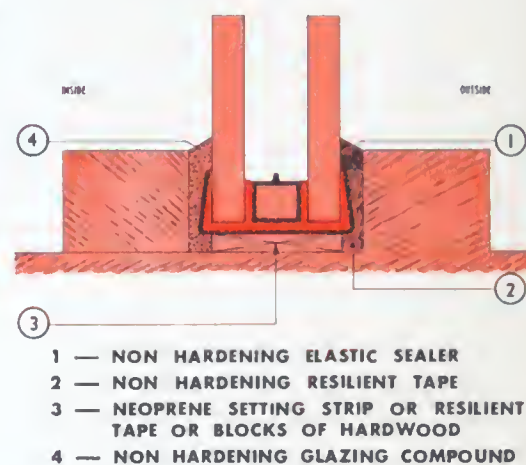
TYPICAL PLYPANE INSTALLATION IN METAL WINDOW, CURTAINWALL STORE FRONT
SEE SKETCH (A)

TYPICAL PLYPANE INSTALLATION IN WOOD SASH, CURTAINWALL OR FRAMES
SEE SKETCH (B)

(A) IN METAL



(B) IN WOOD



WARRANTY

We make no warranty, express or implied, except that for a period of five (5) years from the date of manufacture we warrant that under normal conditions material obstruction of vision, resulting from film formation or dust collection between the interior glass surface of a PLYPANE UNIT will not occur.

This warranty will be void if the PLYPANE UNIT is not handled or installed in accordance with our instructions, or is damaged in handling or installation, or if the unit is subjected to stresses resulting from localized application of heat, which causes excessive temperature differentials over the glass surfaces or edges, or if strain is applied to the unit by movement of the building, or if provisions have not been made in accordance with sound practice for adequate expansion or contraction of framing members.

Our maximum liability under this warranty shall be the delivery of replacement PLYPANE UNIT to the railroad shipping point nearest the place of installation. This warranty does not apply to such replacement lights beyond the original five-years period applying to the original unit.

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ERRERY THERIEN & FILS LIMITED

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